

CLAIMS

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1. A method of dynamically re-allocating a frequency spectrum to a plurality of radio networks (RNs; 16) in accordance with a predefined spectrum allocation scheme,
10 wherein a spectrum resource has previously been allocated to each RN (16) or group of RNs (16, 16'), comprising:
 - generating an electronic spectrum request for a RN (16) or a group of RNs (16, 16'); and
 - 15 - transmitting the electronic spectrum request via a communications network (18) to a server infrastructure (12) which also receives electronic spectrum requests for other RNs (16), the server infrastructure (12) processing the received electronic spectrum requests in accordance with the spectrum re-allocation scheme to re-allocate the spectrum resources to the plurality of RNs (16).
2. The method of claim 1,
25 wherein the re-allocation is performed continuously or wherein the re-allocation is performed quasi-continuously.
3. The method of claim 1 or 2,
30 further comprising determining a service quality of one of the RNs (16) taking into account the actual or predicted traffic on the RN's (16) spectrum resource and generating the electronic spectrum request in dependence of the service quality.

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4. The method of one of claims 1 to 3,
wherein the whole frequency spectrum is re-allocated.
- 5 5. The method of one of claims 1 to 3,
wherein only a portion of the frequency spectrum is re-
allocated and wherein the portion of the frequency spec-
trum to be re-allocated is taken from the individual
RNs' (16) spectrum resources according to a predefined
10 contribution scheme.
6. The method of one of claims 1 to 5,
wherein the spectrum allocation scheme is based on spec-
trum credits relating to elementary spectrum units.
- 15 7. The method of claim 6,
wherein each RN (16) or group of RNs (16, 16') is as-
signed the same or an individual first number of spec-
trum credits and wherein an electronic spectrum request
20 for an RN (16) comprises a specification of a second
number of spectrum credits representative of the re-
quested spectrum resource.
8. The method of claim 6 or 7,
25 wherein the communications network (18) allows to re-
assign the spectrum credits among the plurality of RNs
(16).
9. The method of one of claims 6 to 8,
30 wherein the spectrum credits have a limited temporal va-
lidity.
10. The method of one of claims 1 to 9,
wherein the spectrum re-allocation scheme is auction-
35 based and wherein the electronic spectrum requests com-
prise electronic bids submitted via the communications
network (18).

11. The method of claim 10,
wherein the electronic bids relate to one or more frequency bundles comprised within the frequency spectrum
5 and wherein a specific frequency bundle is re-allocated to the RN (16) associated with the best electronic bid.
12. The method of claim 11,
wherein, prior to the next re-allocation process for all
10 RNs (16), the specific frequency bundle or a part thereof re-allocated to the RN (16) or group of RNs (16, 16') associated with the best electronic bid is allocated to another RN (16) or group of RNs (16, 16').
13. The method of claim 10,
wherein the frequency spectrum to be re-allocated is partitioned bid-proportionally.
14. The method of one of claims 10 to 13,
20 wherein the electronic bids are submitted iteratively.
15. A computer program product comprising program code portions for performing the steps of claims 1 to 14.
16. The computer program product of claim 15, stored on a
25 computer readable recording medium.
17. A system for dynamically re-allocating a frequency spectrum to a plurality of radio networks (RNs; 16) in accordance with a predefined spectrum re-allocation
30 scheme, wherein a spectrum resource has previously been allocated to each RN (16) or group of RNs (16, 16'), comprising:
- a communications network (18);
35 - at least one RN infrastructure (A, B, C, D) with one or more RNs (16, 16'), means (14) for generating an electronic spectrum request, and means (14) for trans-

mitting the electronic spectrum request via the communications network; and

- a server infrastructure (12) in communication via the communications network (18) with the at least one RN infrastructure (A, B, C, D), the server infrastructure (12) having means for receiving electronic spectrum requests and means for processing the received electronic spectrum requests in accordance with the spectrum re-allocation scheme to re-allocate the spectrum resources to the plurality of RNs (16).

18. The system of claim 18, configured as an electronic auction network.

- 19. A server infrastructure (12) for dynamically re-allocating a frequency spectrum to a plurality of radio networks (RNs; 16) in accordance with a predefined spectrum re-allocation scheme, wherein a spectrum resource has previously been allocated to each RN (16) or group of RNs (16), comprising:
 - means for receiving electronic spectrum requests in communication via a communications network (18) with at least one RN infrastructure (A, B, C, D); and
 - means for processing the received electronic spectrum requests in accordance with the spectrum re-allocation scheme to re-allocate the spectrum resources to the plurality of RNs (16).

- 20. A radio network (RN) infrastructure (A, B, C, D) utilizing a previously allocated spectrum resource, comprising:
 - at least one RN (16);
 - a device (14) for generating an electronic spectrum request and for transmitting the electronic spectrum request via a communications network (18) to a server infrastructure (12) which also receives electronic spectrum requests for other RNs (16), the server infrastruc-

ture (12) processing the received spectrum requests in accordance with a predefined spectrum re-allocation scheme to re-allocate a spectrum resources to the at least one RN (12).